Finisar®

25 CELEBRATING 25 YEARS

Product Guide

Transceivers, Transponders, and Active Cables for
Datacom and Telecom Applications

CFP

QSFP

SFP+

XFP

BOA

Active Cable

Transceivers, Transponders, and Active Cables for Datacom and Telecom Applications

Finisar's broad product selection and innovative technology have made us the optical module manufacturer of choice for all major networking equipment vendors worldwide. We have taken a leading role in transforming the datacommunications and telecommunications equipment market from utilizing discrete optical components to leveraging the design and pay-as-you-grow flexibility offered by pluggable modules. Our products are fully compliant with Ethernet, Fibre Channel, Infiniband, SONET/SDH/OTN and PON standards and operate at data rates up to 100 Gb/s. They are capable of distances ranging from very short reach within a datacenter to campus, access, metro, and long-haul reaches. They feature outstanding performance over extended voltage and temperature ranges, while minimizing jitter, electromagnetic interference (EMI) and power dissipation.

Finisar Modules are available in a wide variety of form factors:

SFP (copper and optical; longwave, shortwave and WDM)

- **DATACOM** applications using Fast Ethernet, Gigabit Ethernet, 1x/2x/4x Fibre Channel
- **TELECOM** applications using OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 across all reaches

Features

- 3.3 V operating voltage
- Distances from very short links up to 100+ km
- Wide operating temperature range
- Metal enclosure for lower EMI
- Digital diagnostics
- Wireless CPRI/OBSAI compliant

SFP

SFP+ (optical; longwave and shortwave)

- **DATACOM** applications using 10 Gigabit Ethernet and 2x/4x/8x/16x Fibre Channel

Features

- 3.3 V operating voltage
- Supports bit rates up to 14.025 Gb/s
- Distances from short links up to 80 km metro links
- Wide operating temperature range
- Digital diagnostics
- Wireless CPRI/OBSAI compliant

SFP+

CFP (optical; longwave and shortwave)

- **DATACOM** applications using 40G and 100G Ethernet
- **TELECOM** applications using OTU3 and OTU4

Features

- Hot-pluggable CFP form factor
- Supports 39.8 Gb/s to 112 Gb/s aggregate bit rates
- CFP MSA-compliant form factor
- Maximum link length of 100m on OM3 MMF, 150m on OM4 MMF, 10km on SMF, and 500km in Amplified DWDM Applications
- Single 3.3 V power supply

CFP

QSFP (optical; longwave and shortwave)

- **DATACOM** applications using 40G Ethernet
- **TELECOM** applications using OTU3

Features

- Four-channel full-duplex transceiver module
- Hot Pluggable, MSA-compliant QSFP+ form factor
- Maximum link length of 100 m on OM3 MMF, 150 m on OM4 MMF, and 10 km on SMF
- Multirate capability; supports 1.06 Gb/s to 11.15 Gb/s per channel

QSFP

CXP (optical; shortwave)

- **DATACOM** applications using 100G Ethernet and chassis interconnections

Features

- Twelve-channel full-duplex transceiver module
- Hot Pluggable CXP form factor
- Maximum link length of 100m on OM3 MMF and 150m on OM4 MMF
- Multirate capability: supports 1.06 Gb/s to 12.5 Gb/s per channel

CXP

Active Optical Cables

laserwire®	10 Gb/s Serial Active Optical Cable for 1/10GbE and 1/2/4/8x Fibre Channel
SFPwire®	10 Gb/s SFP+ Active Optical Cable for 10G Ethernet
quadwire®	40 Gb/s to 56 Gb/s Parallel Active Optical Cable for 40GbE, InfiniBand 4xQDR, and Infiniband 4xFDR
C.wire®	150 Gb/s Parallel Active Optical Cable for 100GbE and InfiniBand 12xQDR

Active Optical Cables

ENDURANCE Compact Transceivers (optical; longwave and shortwave)

Features

- Compact form-factor for high-density solutions
- Data rate flexibility including 10GbE, GbE, 8G/4G/2G/1G Fibre Channel
- Board-mounted for an edge optical interface or internal mounting
- Designed for rugged applications

Optical Engines (optical; shortwave)

– **DATACOM** applications for inter-chassis connections

Features

- Twelve-channel full-duplex transceiver modules (BOA)
- Twelve-channel transmitter and receiver modules (SNAP12)
- Maximum link length of 100m at 10 Gb/s on OM3 MMF Fiber (BOA)
- Maximum link length of 600m at 2.5 Gb/s on OM3 MMF Fiber (SNAP12)
- Multirate capability: supports 1 Gb/s up to 28.05 Gb/s per channel

XFP (optical; longwave, shortwave, DWDM, and Tunable)

– **DATACOM** applications using 10 Gigabit Ethernet and 10x Fibre Channel

– **TELECOM** applications using OC-192/STM-64

Features

- Supports bit rates up to 11.3 Gb/s
- Distances up to 80 km
- Digital diagnostics

X2/XENPAK (optical; longwave and shortwave)

– **DATACOM** applications using 10 Gigabit Ethernet and 10x Fibre Channel

Features

- 1.2 V, 3.3 V and 5 V operating voltage
- Supports bit rates up to 10.5 Gb/s
- Distances up to 10 km
- Digital diagnostics

300 PIN (optical; longwave)

– **TELECOM** 10 Gb/s and 40 Gb/s applications

Features

- Supports bit rates up to 43.1 Gb/s
- Available in RZ-OOK (10G), NRZ-OOK (10G/40G), and NRZ-DPSK (40G) formats
- Compliant to industry standards (ITU-T; SFI-4/5; 300 PIN MSA)
- DWDM broadly 50GHz spaced tunablility across C or L bands

SFF (optical 2x5, 2x7 and 2x10; longwave and shortwave)

– **DATACOM** applications using Gigabit Ethernet, 1x/2x/4x Fibre Channel

– **TELECOM** applications using OC-3/STM-1, OC-12/STM-4 and OC-48/STM-16 across all reaches

Features

- 3.3 V operating voltage
- Distances from very short links up to 80 km
- Wide operating temperature range
- Metal enclosure for lower EMI
- 2x7 and 2x10 incorporate digital diagnostics

PON (optical; longwave)

– **TELECOM** access applications for GPON and EPON

Features

- 3.3 V operating voltage
- EPON stick incorporates full EPON ONU functionality
- Distances up to 20 km, Class B+, PX-20+
- Digital diagnostics

Finisar's Patented Digital Diagnostics

Finisar's XFP, XPAK, X2, XENPAK, 300 PIN, SFP, SFP+, and 2x7 and 2x10 SFF transceivers feature a microprocessor and diagnostics interface that provides performance information on the data link. Users can remotely monitor—in real-time—received optical power, transmitted optical power, laser bias current, transceiver input voltage and transceiver temperature of any transceiver in the network. These digital diagnostic functions provide network managers with a highly accurate, cost-effective tool for implementing reliable performance monitoring.

ENDURANCE

Optical Engines

XFP

XENPAK and X2

300 PIN

SFF

PON

World's Largest Supplier of Optical Communication Components and Subsystems

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SFP

SFP+

SFF

PON

XFP

XENPAK and X2

300 PIN

CFP

ENDURANCE

Optical Engines

AOC/QSFP/CXP

Finisar

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	Part Number	RoHS (lead free)	Rate Select	Media Type	Wavelength (nm)	Transmitter	Receiver	Data Rate (max)	Voltage Supply (V)	Optical Fast Ethernet	Optical Gigabit Ethernet	1x Fibre Channel	2x Fibre Channel	4x Fibre Channel	8x Fibre Channel	16x Fibre Channel	SONET OC-3	SONET OC-12	SONET OC-48	SONET OC-192	SONET OC-768	OTN OTU3	OTN OTU4	10x Fibre Channel	10 Gigabit Ethernet	40G Ethernet	100G Ethernet	IB QDR	IB FDR	IB SDR	1000BASE-T	PON	Wireless (CPRI/OBSAI)†	Case Temperature Range (°C)	Connector	Module Type	Diagnostics	Reach
SFP	FCLF-8520/21-3	✓		Copper	N/A	N/A	N/A	1.25 Gb/s	3.3																						●		●	0 to 85	RJ-45	Pluggable	N/A	100 m
	FCLF852xP2BTL	✓		Copper	N/A	N/A	N/A	1.25 Gb/s	3.3																						●		●	- 40 to 85	RJ-45	Pluggable	N/A	100 m
	FTLF8519P3xNL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●																				●	- 20 to 85	LC	Pluggable	Digital	550 m
	FTLF8519P3xTL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●																				●	- 40 to 85	LC	Pluggable	Digital	550 m
	FTLF8524P3xNL	✓		Multimode	850	Oxide VCSEL	PIN	3.7 GB/s	3.3		■	■	■																				●	- 40 to 85	LC	Pluggable	Digital	300 m
	FTLF8524P2xNV	✓	✓	Multimode	850	Oxide VCSEL	PIN	4.25 Gb/s	3.3		●	●	●	●																			●	- 20 to 85	LC	Pluggable	Digital	550 m
	FTLF1217P2xTL	✓		Multimode	1310	LED	PIN	200 Mb/s	3.3	●							■																●	- 40 to 85	LC	Pluggable	Digital	2 km
	FTLF1318P2xCL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	1.25 Gb/s	3.3		●	●																					●	0 to 70	LC	Pluggable	N/A	10 km
	FTLF1318P3xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	1.25 Gb/s	3.3		●	●																					●	- 40 to 85	LC	Pluggable	Digital	10 km
	FTLF1419P1xCL	✓		Single Mode	1310	DFB Laser	PIN	2.125 Gb/s	3.3		●	●	●																				●	- 10 to 70	LC	Pluggable	Digital	55 km
	FTLF1518P1xTL	✓		Single Mode	1550	DFB Laser	PIN	1.25 Gb/s	3.3		●	●																					●	- 40 to 85	LC	Pluggable	Digital	90 km
	FTLF1519P1xCL	✓		Single Mode	1550	DFB Laser	PIN	2.125 Gb/s	3.3		●	●	●																				●	- 10 to 70	LC	Pluggable	Digital	90 km
	FTLF1519P1xNL	✓		Single Mode	1550	DFB Laser	PIN	2.125 Gb/s	3.3		●	●	●																				●	- 5 to 85	LC	Pluggable	Digital	90 km
	FTLF1619P1xCL	✓		Single Mode	1550	DFB Laser	APD	2.125 Gb/s	3.3		●	●	●																				●	- 10 to 70	LC	Pluggable	Digital	115 km
	FTLF1324P2xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	4.25 Gb/s	3.3		■	●	●	●																			●	- 40 to 85	LC	Pluggable	Digital	4 km
	FTLF1324P2xTV	✓	✓	Single Mode	1310	Fabry-Perot Laser	PIN	4.25 Gb/s	3.3		●	●	●	●																			●	- 40 to 85	LC	Pluggable	Digital	4 km
	FTLF1424P2xCR	✓		Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●																			●	- 10 to 70	LC	Pluggable	Digital	10 km
	FTLF1424P2xCD	✓	✓	Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		●	●	●	●																			●	- 10 to 70	LC	Pluggable	Digital	10 km
	FTLF1424P2xTR	✓		Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●																			●	- 40 to 85	LC	Pluggable	Digital	10 km
	FTLF1424P2xTD	✓	✓	Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		●	●	●	●																			●	- 40 to 85	LC	Pluggable	Digital	10 km
	FTLF1424P2xCL	✓		Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		■	●	●	●																			●	- 10 to 70	LC	Pluggable	Digital	30 km
	FTLF1424P2xCV	✓	✓	Single Mode	1310	DFB Laser	PIN	4.25 Gb/s	3.3		●	●	●	●																			●	- 10 to 70	LC	Pluggable	Digital	30 km
	FTLF1323P1xTR	✓		Single Mode	1310	Fabry-Perot Laser	PIN	155 Mb/s	3.3	■							●																●	- 40 to 85	LC	Pluggable	Digital	15 km
	FTLF1323P1xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	155 Mb/s	3.3	■							●																●	- 40 to 85	LC	Pluggable	Digital	40 km
	FTLF1523P1xTL	✓		Single Mode	1550	DFB Laser	PIN	155 Mb/s	3.3	■							●																●	- 40 to 85	LC	Pluggable	Digital	80 km
	FTLF1322P1xTR	✓		Single Mode	1310	Fabry-Perot Laser	PIN	622 Mb/s	3.3								●	●															●	- 40 to 85	LC	Pluggable	Digital	15 km
	FTLF1422P1xTL	✓		Single Mode	1310	DFB Laser	PIN	622 Mb/s	3.3									●															●	- 40 to 85	LC	Pluggable	Digital	40 km
	FTLF1522P1xTL	✓		Single Mode	1550	DFB Laser	PIN	622 Mb/s	3.3									●															●	- 40 to 85	LC	Pluggable	Digital	80 km
	FTLF1321P1xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	- 40 to 85	LC	Pluggable	Digital	2 km
	FTLF1421P1xCL	✓		Single Mode	1310	DFB Laser	PIN	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	- 10 to 70	LC	Pluggable	Digital	15 km
	FTLF1421P1xTL	✓		Single Mode	1310	DFB Laser	PIN	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	- 40 to 85	LC	Pluggable	Digital	15 km
	FTLF1521P1xCL	✓		Single Mode	1550	DFB Laser	PIN	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	0 to 70	LC	Pluggable	Digital	15 km
	FTLF1721P1xCL	✓		Single Mode	1310	DFB Laser	APD	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	- 10 to 70	LC	Pluggable	Digital	40 km
	FTLF1721P2xTL	✓		Single Mode	1310	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●				■	■	●														●	- 40 to 85	LC	Pluggable	Digital	40 km
	FTLF1621P1xCL	✓		Single Mode	1550	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●				■	■	●														●	- 10 to 70	LC	Pluggable	Digital	80 km
	FWLF1523P1C51 (OSC)	✓		Single Mode	1511	DFB Laser	PIN	155 Mb/s	3.3	■							■																	- 20 to 70	LC	Pluggable	Digital	80 km
	FWLF1523P1N51 (OSC)	✓		Single Mode	1511	DFB Laser	PIN	155 Mb/s	3.3	■							■																	- 20 to 85	LC	Pluggable	Digital	80 km
	FWLF15197Dxx(**)	✓		Single Mode	1471, 1491, 1511, 1531 1551, 1571, 1591, 1611	CWDM DFB Laser	PIN	1.25 Gb/s	3.3	■	●	●					■	■															●	0 to 70	LC	Pluggable	Digital	80 km
	FWLF-1619-7D-xx(**)	✓		Single Mode	1471, 1491, 1511, 1531 1551, 1571, 1591, 1611	CWDM DFB Laser	APD	1.25 Gb/s	3.3	■	●	●					■	■															●	0 to 70	LC	Pluggable	Digital	100 km
	FWLF15217Dxx(**)	✓		Single Mode	1471, 1491, 1511, 1531 1551, 1571, 1591, 1611	CWDM DFB Laser	PIN	2.67 Gb/s	3.3	■	●	●	●				■	■	■														●	0 to 70	LC	Pluggable	Digital	50 km
	FWLF1521P2Nxx	✓		Single Mode	1471, 1491, 1511, 1531 1551, 1571, 1591, 1611	CWDM DFB Laser	PIN	2.67 Gb/s	3.3	■	●	●	●				■	■	■														●	- 10 to 85	LC	Pluggable	Digital	50 km
	FWLF-1621-7D-xx(**)	✓		Single Mode	1471, 1491, 1511, 1531 1551, 1571, 1591, 1611	CWDM DFB Laser	APD	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	0 to 70	LC	Pluggable	Digital	80 km
	FWLF1621P2Txx	✓		Single Mode	1471, 1491, 1511, 1531 1551, 1571, 1591, 1611	CWDM DFB Laser	APD	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	- 40 to 85	LC	Pluggable	Digital	80 km
	FWLF1524P2Vxx	✓	✓	Single Mode	1471, 1491, 1511, 1531 1551, 1571, 1591, 1611	CWDM DFB Laser	PIN	4.25 Gb/s	3.3		●	●	●	●					●														●	- 5 to 75	LC	Pluggable	Digital	40 km
	FWLF1625P2Vxx	✓	✓	Single Mode	1471, 1491, 1511,1531 1551, 1571, 1591, 1611	CWDM DFB Laser	APD	5 Gb/s	3.3					●			■	■	■														●	- 5 to 70	LC	Pluggable	Digital	80 km
	FWLF1631xx(**)	✓		Single Mode	DWDM C-Band	DWDM DFB Laser	APD	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	0 to 70	LC	Pluggable	Digital	120 km
	FWLF1631Rxx(**)	✓		Single Mode	DWDM C-Band	DWDM DFB Laser	APD	2.67 Gb/s	3.3	■	●	●	●				■	■	●														●	0 to 70	LC	Pluggable	Digital	160 km
	FWLF1634RLxx	✓		Single Mode	DWDM C-Band	DWDM DFB Laser	APD	4.25 Gb/s	3.3		■	●	●	●			■	■	■														●	- 5 to 70	LC	Pluggable	Digital	80 km
SFP+	FTLF8529P3BCV	✓	✓	Multimode	850	Oxide VCSEL	PIN	14.025 Gb/s	3.3					●	●	●																		0 to 70C	LC	Pluggable	Digital	100 m
	FTLF8529P3BNV	✓	✓	Multimode	850	Oxide VCSEL	PIN	14.025 Gb/s	3.3					●	●	●																		0 to 85C	LC	Pluggable	Digital	100 m
	FTLF8528P3BCV	✓	✓	Multimode	850	Oxide VCSEL	PIN	8.5 Gb/s	3.3			■	●	●	●																			- 5 to 70	LC	Pluggable	Digital	150 m (*)
	FTLF8528P3BNV	✓	✓	Multimode	850	Oxide VCSEL	PIN	8.5 Gb/s	3.3			■	●	●	●																			- 5 to 70	LC	Pluggable	Digital	150 m (*)
	FTLF1328P2BNV	✓	✓	Single Mode	1310	Fabry-Perot Laser	PIN	8.5 Gb/s	3.3				●	●	●																			- 5 to 85	LC	Pluggable	Digital	1.4 km
	FTLF1428P2BNV	✓	✓	Single Mode	1310	DFB Laser	PIN	8.5 Gb/s	3.3			■	●	●	●																			- 5 to 85	LC	Pluggable	Digital	10 km
	FTLF1429P3BNV	✓	✓	Single Mode	1310	DFB Laser	PIN	14.025 Gb/s	3.3					●	●	●																		- 5 to 85	LC	Pluggable	Digital	10 km
	FTLF1429P3BCE	✓		Single Mode	1310	DFB Laser	PIN	14.025 Gb/s	3.3					●	●	●																		0 to 70	LC	Pluggable	Digital	25 km
	FTLX8571D3BCL	✓		Multimode	850	Oxide VCSEL	PIN	10.5 Gb/s	3.3															●	●									0 to 70	LC	Pluggable	Digital	300 m (*)
	FTLX8571D3BCV	✓	✓	Multimode	850	Oxide VCSEL	PIN	10.3 Gb/s	3.3		●														●									0 to 70	LC	Pluggable	Digital	300 m (*)
	FTLX8571D3BNL	✓		Multimode	850	Oxide VCSEL	PIN	10.5 Gb/s	3.3															●	●									0 to 85	LC	Pluggable	Digital	300 m (*)
	FTLX8573D3BTL	✓		Multimode	850	Oxide VCSEL	PIN	10.5 Gb/s	3.3															●	●									- 40 to 85	LC	Pluggable	Digital	300 m (*)
	FTLX1371D3BCL	✓		Mutimode	1310	Fabry-Perot Laser	PIN	10.3 Gb/s	3.3																●									- 5 to 70	LC	Pluggable	Digital	220 m (***)
	FTLX1471D3BCL	✓		Single Mode	1310	DFB Laser	PIN	10.5 Gb/s	3.3															●	●									- 5 to 70	LC	Pluggable	Digital	10 km
	FTLX1471D3BCV	✓	✓	Single Mode	1310	DFB Laser	PIN	10.3 Gb/s	3.3		●														●									- 5 to 70	LC	Pluggable	Digital	10 km
	FTLX1471D3BNL	✓		Single Mode	1310	DFB Laser	PIN	10.5 Gb/s	3.3															●	●									- 5 to 85	LC	Pluggable	Digital	10 km
	FTLX1471D3BTL	✓		Single Mode	1310	DFB Laser	PIN	10.5 Gb/s	3.3															●	●									- 40 to 85	LC	Pluggable	Digital	10 km
	FTLX1472M3BCL	✓	✓	Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●					●				●	●									- 5 to 75	LC	Pluggable	Digital	10 km
	FTLX1472M3BNL	✓	✓	Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●					●				●	●									-5 to 85	LC	Pluggable	Digital	10 km
	FTLX1671D3BCL	✓		Single Mode	1550	CML™	PIN	10.3 Gb/s	3.3						■										●									0 to 70	LC	Pluggable	Digital	40 km
	FTLX1671D3BTL	✓		Single Mode	1550	CML™	PIN	10.3 Gb/s	3.3						■										●									- 40 to 85	LC	Pluggable	Digital	40 km
	FTLX1772M3BCL	✓	✓	Single Mode	1310	DFB Laser	APD	11.3 Gb/s	3.3						■					■				■	■									- 5 to 75	LC	Pluggable	Digital	40 km
	FTLX1871M3BCL	✓		Single Mode	1550	EML	APD	11.3 Gb/s	3.3						●					●				●	●									-5 to 70	LC	Pluggable	Digital	80 km
	FTLX2071D3xx (Bi-Di)	✓		Single Mode	1271/1331	DFB Laser	PIN	10.5 Gb/s	3.3															●	●									-40 to 85	LC	Pluggable	Digital	10 km
	FTLX2471DC0xx (CWDM)	✓		Single Mode	1271, 1291, 1311, 1331	CWDM DFB Laser	PIN	10.5 Gb/s	3.3															●	●									-5 to 70	LC	Pluggable	Digital	10 km
	FTLF8526P3BTL	✓		Multimode	850	Oxide VCSEL	PIN	6.144 Gb/s	3.3																								●	- 40 to 85	LC	Pluggable	Digital	300 m (*)
	FTLF1326P3BTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	6.144 Gb/s	3.3																								●	- 40 to 85	LC	Pluggable	Digital	2 km
	FTLF1426P2BTL	✓		Single Mode	1310	DFB Laser	PIN	6.144 Gb/s	3.3																								●	- 40 to 85	LC	Pluggable	Digital	10/15 km
	FTLX1370W3BTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	9.830 Gb/s	3.3																								●	- 40 to 85	LC	Pluggable	Digital	1.4 km
SFF	FTLF8519F2xCL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●																					0 to 70	LC	2x5	N/A	550 m
	FTLF8519F2xNL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●																					- 10 to 85	LC	2x5	N/A	550 m
	FTLF8519F2xTL	✓		Multimode	850	Oxide VCSEL	PIN	2.125 Gb/s	3.3		●	●	●																					- 40 to 85	LC	2x5	N/A	550 m
	FTLF8524E2xNV	✓	✓	Multimode	850	Oxide VCSEL	PIN	4.25 Gb/s	3.3		■	●	●	●																				- 10 to 85	LC	2x7	Digital	550 m
	FTLF1319F1xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	2.125 Gb/s	3.3		●	●	●																					- 40 to 85	LC	2x5	N/A	10 km
	FTLF1321S1xTL	✓		Single Mode	1310	Fabry-Perot Laser	PIN	2.67 Gb/s	3.3		●	●	●				■	■	●															- 40 to 85	LC	2x10	Analog & Digital	2 km
	FTLF1421S1xCL	✓		Single Mode	1310	DFB Laser	PIN	2.67 Gb/s	3.3		●	●	●				■	■	●															- 10 to 70	LC	2x10	Analog & Digital	15 km
	FTLF1721S1xCL	✓		Single Mode	1310	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●				■	■	●															- 10 to 70	LC	2x10	Analog & Digital	40 km
	FTLF1621S1xCL	✓		Single Mode	1550	DFB Laser	APD	2.67 Gb/s	3.3		●	●	●				■	■	●															- 10 to 70	LC	2x10	Analog & Digital	80 km
	FTLF1323F2xTR	✓		Single Mode	1310	Fabry-Perot Laser	PIN	155 Mb/s	3.3	■							●																	- 40 to 85	LC	2x5	N/A	15 km
	FTLF1322F2xTR	✓		Single Mode	1310	Fabry-Perot Laser	PIN	622 Mb/s	3.3								●	●																- 40 to 85	LC	2x5	N/A	15 km
PON	FTEN2115P1NUN (CTC SFP-ONU)	✓		Single Mode	1310/1490	FP Laser	PIN	1.25 Gb/s	3.3																							●		- 20 to 70	SC	Pluggable	Digital	10 km
	FTEN2116P1NUN (CTC SFP-ONU)	✓		Single Mode	1310/1490	FP Laser	PIN	1.25 Gb/s	3.3																							●		- 20 to 70	SC	Pluggable	Digital	20 km
	FTEN2117P1NUN (CTC SFP-ONU)	✓		Single Mode	1310/1490	FP Laser	PIN	1.25 Gb/s	3.3																							●		- 20 to 70	SC	Pluggable	Digital	20 km+
	FTEN2215P1CUN (SFP-ONU)	✓		Single Mode	1310/1490	FP Laser	PIN	1.25 Gb/s	3.3																							●		0 to 70	SC	Pluggable	Digital	10 km
	FTEN2216P1CUN (SFP-ONU)	✓		Single Mode	1310/1490	DFB Laser	PIN	1.25 Gb/s	3.3																							●		0 to 70	SC	Pluggable	Digital	20 km
	FTEN2217P1CUN (SFP-ONU)	✓		Single Mode	1310/1490	DFB Laser	PIN	1.25 Gb/s	3.3																							●		0 to 70	SC	Pluggable	Digital	20 km+
XFP	FTLX8512D3BCL	✓		Multimode	850	Oxide VCSEL	PIN	10.5 Gb/s	3.3						●									●	●									0 to 70	LC	Pluggable	Digital	300 m (*)
	FTLX8512D3BTL	✓		Multimode	850	Oxide VCSEL	PIN	10.5 Gb/s	3.3						●									●	●									- 40 to 85	LC	Pluggable	Digital	300 m (*)
	FTLX1413D3BCL	✓		Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●									●	●									0 to 70	LC	Pluggable	Digital	10 km
	FTLX1412D3BTL	✓		Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●									●	●									- 40 to 85	LC	Pluggable	Digital	10 km
	FTLX1412D3BNL	✓		Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●									●	●									- 5 to 85	LC	Pluggable	Digital	10 km
	FTLX1413M3BCL	✓		Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●					●				●	●									0 to 70	LC	Pluggable	Digital	10 km
	FTLX1412M3BTL	✓		Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●					●				●	●									- 40 to 85	LC	Pluggable	Digital	10 km
	FTLX1412M3BNL	✓		Single Mode	1310	DFB Laser	PIN	11.3 Gb/s	3.3						●					●				●	●									- 5 to 85	LC	Pluggable	Digital	10 km
	FTLX1612M3BCL	✓		Single Mode	1550	EML	PIN	11.3 Gb/s	3.3 and 5						●					●				●	●									- 5 to 75	LC	Pluggable	Digital	40 km
	FTLX1612M3BTL	✓		Single Mode	1550	EML	PIN	11.3 Gb/s	3.3 and 5						●					●				●	●									- 40 to 85	LC	Pluggable	Digital	40 km
	FTLX1812M3BCL	✓		Single Mode	1550	EML	APD	11.3 Gb/s	3.3 and 5						●					●				●	●									- 5 to 70	LC	Pluggable	Digital	80 km
	FTLX3612M3xx	✓		Single Mode	DWDM C-Band (fixed)	DWDM EML	PIN	11.3 Gb/s	3.3 and 5						●					●				●	●									- 5 to 70	LC	Pluggable	Digital	40 km
	FTLX3912M3xx	✓		Single Mode	DWDM C-Band (fixed)	DWDM EML	APD	11.3 Gb/s	3.3 and 5						●					●				●	●									0 to 70	LC	Pluggable	Digital	40 km
	FTLX3813F3xx	✓		Single Mode	DWDM C-Band (fixed)	DWDM EML	APD	8.8 Gb/s	3.3 and 5						●																			- 5 to 70	LC	Pluggable	Digital	80 km
	FTLX3813M3xx	✓		Single Mode	DWDM C-Band (fixed)	DWDM EML	APD	11.3 Gb/s	3.3 and 5						●					●				●	●									0 to 70	LC	Pluggable	Digital	80 km
	FTLX4213M3BCL	✓		Single Mode	1550	CML™	APD	10.5 Gb/s	3.3 and 5											●				●	●									- 5 to 70	LC	Pluggable	Digital	120 km
	FTLX4213xxxxxx	✓		Single Mode	DWDM C/L Band on 50GHz ITU Grid (FEC-Only)	CML™	APD	11.3 Gb/s	3.3 and 5											●				●	●									- 5 to 70	LC	Pluggable	Digital	200 km
	FTLX5813P3Cxxx	✓		Single Mode	C-Band	Narrow Tunable	APD	11.3 Gb/s	3.3 and 5						●					●				●	●									- 5 to 70	LC	Pluggable	Digital	80 km
	FTLX6811MCC	✓		Single Mode	C-Band	Tunable + InP MZM	APD	11.3 Gb/s	3.3 and 5											●				●	●									- 5 to 70	LC	Pluggable	Digital	80 km
	FTLX6611MCC	✓		Single Mode	C-Band	Tunable + InP MZM	PIN	11.3 Gb/s	3.3 and 5											●				●	●									- 5 to 70	LC	Pluggable	Digital	40 km
X2	FTLX8541E2	✓		Multimode	850	Oxide VCSEL	PIN	10.3 Gb/s	1.2, 3.3 and 5																●									0 to 70	SC	Pluggable	Digital	300 m (*)
	FTLX8541F2	✓		Multimode	850	Oxide VCSEL	PIN	10.5 Gb/s	1.2, 3.3 and 5															●										0 to 70	SC	Pluggable	Digital	300 m (*)
	FTLX1341E2	✓		Multimode	1310	Fabry-Perot Laser	PIN	10.3 Gb/s	1.2, 3.3, and 5																●									0 to 70	SC	Pluggable	Digital	220 m (***)
	FTLX1442E2	✓		Single Mode	1310	DFB Laser	PIN	10.3 Gb/s	1.2, 3.3 and 5																●									0 to 70	SC	Pluggable	Digital	10 km
XENPAK	FTLX8561E2	✓		Multimode	850	Oxide VCSEL	PIN	10.3 Gb/s	1.2, 3.3 and 5																●									0 to 70	SC	Pluggable	Digital	300 m (*)
	FTLX1462E2	✓		Single Mode	1310	DFB Laser	PIN	10.3 Gb/s	1.2, 3.3 and 5																●									0 to 70	SC	Pluggable	Digital	10 km
300 PIN	54TRAAV2GPL		✓	Single Mode	1550 NRZ	EML or DFB+MZM	PIN	43.1 Gb/s	3.3, 5, -5.2												●	●												0 to 70	LC/SC/MU	300 PIN	Analog & Digital	2 km
	53DPAAU4JBLCB		✓	Single Mode	C/L Band NRZ-DPSK	Tunable + LN	DLI+ Balanced PIN	44.6 Gb/s	3.3, 5, -5.3												●	●												- 5 to 70	LC/SC/MU	300 PIN	Digital	VLH
CFP	FTLC1182RDNx	✓	✓	Single Mode	1300nm LAN WDM 4 Channels	EML	PIN	103.1 Gb/s	3.3																		●							0 to 70	SC/LC	Pluggable	Digital	10 km
	FTLC1182SDNx	✓	✓	Single Mode	1300nm LAN WDM 4 Channels	EML	PIN	112 Gb/s	3.3														●				●							0 to 70	SC/LC	Pluggable	Digital	10 km
	FTLC5181	✓	✓	Single Mode	C-band	Tunable + InP MZM	PIN	112 Gb/s	3.3														●				●							0 to 70	LC	Pluggable	Digital	30 km
	FTLCSN11	✓		Single Mode	C-band	Tunable + InP MZM	PIN	128 Gb/s	12														●											0 to 70	SC/LC	168 Pin	Digital	2000 km
	FTLQ1381N7NL	✓	✓	Single Mode	1550	EML or DFB+MZM	PIN	44.6 Gb/s	3.3												●	●				●								0 to 70	LC	Pluggable	Digital	2km
	FTLQ7181EALx	✓	✓	Single Mode	1300nm CWDM 4Channels	DFB Laser	PIN	41.2 Gb/s	3.3																	●								- 5 to 75	SC/LC	Pluggable	Digital	10 km
	FTLQ7181MALx	✓	✓	Single Mode	1300nm CWDM 4 Channels	DFB Laser	PIN	44.6 Gb/s	3.3													●				●								- 5 to 75	SC/LC	Pluggable	Digital	10 km
	FTLQ8181EBLM	✓	✓	Multimode	850nm 4 Channels	Oxide VCSEL	PIN	41.2 Gb/s	3.3																	●								0 to 70	MPO(MTP12)	Pluggable	Digital	100 m (*)
	FTLC8281RCNM	✓	✓	Multimode	850nm 10 channels	Oxide VCSEL	PIN	103.1 Gb/s	3.3																		●							0 to 70	MPO(MTP24	Pluggable	Digital	100 m (*)
	FTLC8281SCNM	✓	✓	Multimode	850nm 10 channels	Oxide VCSEL	PIN	112 Gb/s	3.3														●				●							0 to 70	MPO(MTP24	Pluggable	Digital	100 m (*)
ENDURANCE	FTE85xxxx	✓	✓	Multimode	850	Oxide VCSEL	PIN	10 Gb/s	3.3		●	●	●	●	●										●									-40 to 85	LC	Endurance	Digital	550m
	FTE14xxxx	✓	✓	Single Mode	1310	DFB Laser	PIN	10 Gb/s	3.3		●	●	●	●	●										●									-40 to 85	LC	Endurance	Digital	10 km
Optical Engines	FBOTD10SL1C00 (BOA)	✓		Multimode	850	12x VCSEL	PIN	12 x 10.5	3.3		■	■	■	■	■				■	■	■	■	■	■	■	■	■	■	■	■			■	0 to 70	Multiple	Board-mount	Digital	
	FBOTD25SL1C00 (BOA)	✓		Multimode	850	12x VCSEL	PIN	12 x 25.1	2.5 and 3.3		■	■	■	■	■	■			■	■	■	■	■	■	■	■	■	■	■	■			■	0 to 70	Multiple	Board-mount	Digital	
	FTXD02SL1C (SNAP12 Transmitter)	✓		Multimode	850	12x VCSEL	N/A	12 x 2.7 Gb/s	3.3		■	■	■																	●				- 5 to 75	MegArray	Pluggable	N/A	600 m
	FRXD02SL1C (SNAP12 Receiver)	✓		Multimode	850	N/A	PIN	12 x 2.7 Gb/s	3.3		■	■	■																	●				- 5 to 75	MegArray	Pluggable	N/A	600 m
	FTXD02SL1T (SNAP12 Transmitter)	✓		Multimode	850	12x VCSEL	N/A	12 x 2.7 Gb/s	3.3		■	■	■																	●				- 40 to 85	MegArray	Pluggable	N/A	600 m
	FRXD02SL1T (SNAP12 Receiver)	✓		Multimode	850	N/A	PIN	12 x 2.7 Gb/s	3.3		■	■	■																	●				- 40 to 85	MegArray	Pluggable	N/A	600 m
AOC/QSFP/CXP	Laserwire	✓		Multimode	850	Oxide VCSEL	PIN	10.3 Gb/s	3.3		■	■	■	■	■										●									0 to 60	N/A	AOC	N/A	30 m
	SFPwire (SFP+ based AOC)	✓		Multimode	850	Oxide VCSEL	PIN	10.3 Gb/s	3.3																●									0 to 70	N/A	AOC	N/A	20 m
	Quadwire (40G QSFP-based AOC)	✓		Multimode	850	4x VCSEL	PIN	42 Gb/s	3.3							●										●		●						0 to 70	N/A	AOC	Digital	300 m
	Quadwire (56G QSFP-based AOC)	✓		Multimode	850	4x VCSEL	PIN	42 Gb/s	3.3							●										●		●	●					0 to 70	N/A	AOC	Digital	100 m
	C.wire (CXP-based AOC)	✓		Multimode	850	12x VCSEL	PIN	150 Gb/s	3.3																		●	●						0 to 70	N/A	AOC	Digital	300 m
	FTL410QE2C (QSFP+ transceiver)	✓		Multimode	850	4x VCSEL	PIN	41.2 Gb/s	3.3																	●								0 to 70	MPO	QSFP+	Digital	100 m
	FTL4C1QE1C (QSFP transceiver)	✓		Single Mode	1300nm CWDM 4 Channels	DFB Laser	PIN	41.2 Gb/s	3.3																	●								0 to 70	LC	Pluggable	Digital	10 km
	FTL4C1QM1C (QSFP transceiver)	✓		Single Mode	1300nm CWDM 4 Channels	DFB Laser	PIN	44.6 Gb/s	3.3													●				●								0 to 70	LC	Pluggable	Digital	10 km
	FTLD10CE1C (CXP transceiver)	✓		Multimode	850	12x VCSEL	PIN	120 Gb/s	3.3															■	■	■	●	■						0 to 70	MPO(MTP24)	CXP	Digital	100 m (*)
	FTLD12CL1C (CXP transceiver)	✓		Multimode	850	12x VCSEL	PIN	150 Gb/s	3.3															■	■	■	■	■						0 to 70	MPO(MTP24)	CXP	Digital	100 m (*)

(*) Using 50-micron multimode fiber with 2000 MHz* km bandwidth (**) Extended case temperature ranges and reaches are available upon request (***) 100 m using 50-micron multimode fiber with 400 MHz*km bandwidth Compliant ● Compatible ■ VLH: Very Long Haul †Wireless CPRI/OBSAI include the following data rates: 1.23 G, 3.07 G, 4.92 G, 6.14 G